

DISCUSSION OF THE AMENDMENT

Due to the length of the specification herein, Applicants will cite to the paragraph number of the published patent application (PG Pub) of the present application, i.e., US 2007/0167566, when discussing the application description, both in this section and in the Remarks section, *infra*, rather than to page and line of the specification as filed.

Claim 1 has been amended by deleting “such as . . .” and by inserting appropriate Markush terminology.

New Claims 7-18 have been added. Claim 7 claims by subject matter deleted from above-discussed amended Claim 1. Claims 8-10 are supported by Claim 1. Claim 11 is supported by paragraph [0029]. Claim 12 is supported by paragraph [0051]. Claims 13-14 are supported by paragraph [0052]. Claims 15-17 are supported by paragraph [0093]. Claim 18 is supported by paragraph [0018] and the Examples and Comparative Examples.

No new matter is believed to have been added by the above amendment. Claims 1-18 are now pending in the application.

REMARKS

Applicants thank the Examiner and the Examiner's supervisor for the courtesy extended to Applicants' attorney during the interview held December 30, 2008, in the above-identified application. During the interview, Applicants' attorney explained the presently-claimed invention and why it is patentable over the applied prior art, and discussed other issues raised in the Office Action. The discussion is summarized and expanded upon below.

The rejection of Claims 1-6 under 35 U.S.C. § 103(a) as unpatentable over US 4,620,021 (Starzewski et al), further in light of US 4,824,934 (van Broekhoven et al), US 6,559,326 (Kristen et al) and US 6,160,049 (Mathauer et al), is respectfully traversed.

As described in the specification beginning at paragraph [0001], and as Applicants' attorney explained during the above-referenced interview, the present invention relates to a process for the preparation of an aqueous polymer dispersion by reacting at least one olefin in the presence of at least one polymerization catalyst and one emulsifier in an aqueous medium, wherein the polymerization catalyst is produced in an *in situ* reaction by reacting the ligand compound 2,6-dichloro-para-benzoquinone (Ia) and/or 2,3,6-trichloro-para-benzoquinone (Ib), with a particular phosphine compound or diphosphine compound, and a particular metal compound. By use of either or both of the above ligand compounds, Applicants are able to achieve higher solids contents compared to the use of other ligand compounds close to, but different in, structure, such as 2,3,5,6-tetrachloro-para-benzoquinone (also known as chloranil), as described in the specification at paragraph [0018]. The comparative data in the specification shows the increase in solids content when using the ligands of the present claims. Thus, in Examples 1 and 2, which use ligand Ib and ligand Ia, respectively, the solids content of the aqueous polymer dispersion was 22% by weight and 32% by weight, respectively. In Comparative Example 1, which used chloranil, the solids content was 18% by weight. Similarly, in Example 3, which used ligand Ib, the solids

content was 15% by weight; in Comparative Example 2, which used chloranil, the solids content was 8% by weight.

As noted by Applicants' attorney during the interview, the applied prior art does not recognize the nexus discovered by Applicants between ligand used and solids content achieved.

Starzewski et al is drawn to particular organic nickel compounds as catalysts in the polymerization of olefins, which catalysts are derived from an adduct or mixture of a nickel compound, a quinoid compound, a tertiary phosphine and a compound of formula  $(R^3)(R^2)(R^1)(P)=X$ . As the Examiner recognizes, chloranil is listed as an applicable quinoid compound, although the examples in Starzewski et al use p-benzoquinone as the quinoid compound therein.

The Examiner relies on van Broekhoven et al for a disclosure of 2,6-dichloro-1,4-benzoquinone and trichloro-1,4-benzoquinone as applicable quinone compounds used in van Broekhoven et al's catalysts. The catalyst is obtained from the reaction of a Group VIII metal, such as nickel, a non-hydrohalogenic acid having a pKa less than 6, a particular bidentate ligand of a particular formula, and the quinone (column 2, lines 48-68). The catalyst of van Broekhoven et al is disclosed as useful for the preparation of polymers of carbon monoxide and at least one olefinically unsaturated organic compound (column 1, lines 6-8).

The Examiner relies on Kristen et al for a disclosure of the use of emulsifiers and emulsion polymerizations for the polymerization of numerous unsaturated monomers, preferably ethylene, using particular metal complexes.

The Examiner relies on Mathauer et al for a disclosure of mini emulsion polymerization.

The Examiner holds that it would have been obvious, in effect, to carry out Starzewski et al's polymerization using the ligands of van Broekhoven et al, the aqueous solvents and surfactants of Kristen et al, and the mini emulsion polymerization of Mathauer et al.

In reply, and as Applicants' attorney pointed out during the interview, the only applied reference disclosing the particular ligands of the present claims is van Broekhoven et al, and they are disclosed to make a catalyst for the copolymers of carbon monoxide and at least one olefinically unsaturated organic compound. Starzewski et al, on the other hand, is drawn exclusively to the polymerization of olefins. It can only be speculated what effect the ligands of van Broekhoven et al would have on a polymerization that does not involve the presence of carbon monoxide. Thus, a *prima facie* case of obviousness has not been made out. Nevertheless, and as discussed above, the prior art does not recognize the nexus that Applicants have discovered between aqueous polymer dispersion solids content and the particular ligand used. Accordingly, it is respectfully requested that this rejection be withdrawn.

The rejection of Claims 1-6 on the ground of nonstatutory obviousness-type double patenting over Claims 1-7 of US 7,417,098 (Chowdhry et al), is respectfully traversed. The relationship of the claims of Chowdhry et al to the present claims is as genus to species. However, as discussed above with regard to the prior art rejection, Applicants have shown an unexpected result with the particular ligand species of the present claims. Thus, the above-discussed comparative data applies herein as well. Accordingly, it is respectfully requested that this rejection be withdrawn.

The objection to the specification is respectfully traversed. The Examiner finds that the sentence: "Isolation and purification of the complex formed in situ are dispensed with" appears to be incomplete or non-idiomatic.

In reply, the meaning of the sentence is clear. It clearly means that after the complex is formed, there is no necessity to isolate and purify it. The sentence is consistent with the statutory requirement that the invention be described in such full, clear, concise, and exact terms as to enable a person skilled in the art to practice the invention. Accordingly, it is respectfully requested that the objection be withdrawn.

Finally, the Examiner is respectfully requested to correct the record that the Information Disclosure Statement referred to on the Office Action Summary page was filed April 27, 2006, not July 18, 2007.

All of the presently-pending claims in this application are now believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to pass this application to issue.

Customer Number

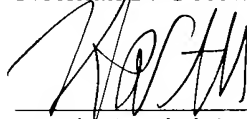
**22850**

Tel: (703) 413-3000  
Fax: (703) 413 -2220  
(OSMMN 08/07)

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,  
MAIER & NEUSTADT, P.C.

Norman F. Oblon



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Harris A. Pitlick

Registration No. 38,779